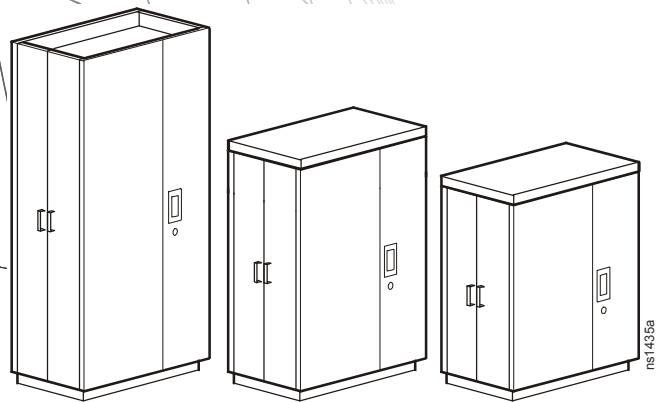


Installation and Customization

NetShelter CX Enclosures





This manual is available in English on the APC Web site (www.apc.com).

Dieses Handbuch ist in Deutsch auf der APC Webseite (www.apc.com) verfügbar.

Este manual está disponible en español en la página web de APC (www.apc.com).

Ce manuel est disponible en français sur le site internet d'APC (www.apc.com).

Questo manuale è disponibile in italiano sul sito web di APC (www.apc.com).

本マニュアル<各国の言語に対応する>はAPC ウェブサイト (www.apc.com) からダウンロードできます。

Instrukcja obsługi w języku polskim jest dostępna na stronie internetowej APC (www.apc.com).

Este manual está disponível em português no site da APC (www.apc.com).

Данное руководство на русском языке доступно на сайте APC (www.apc.com)

Bu kullanım klavuzunun Türkçesi APC web sayfasında (www.apc.com) mevcuttur.

在 APC 公司的网站上 (www.apc.com) 有本手册的中文版。

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General Information

Important Safety Information

Read the instructions carefully and look at the equipment to become familiar with the device before trying to install, operate, service or maintain it. The following special messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.



The addition of this symbol to a Danger or Warning safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE addresses practices not related to physical injury including certain environmental hazards, potential damage or loss of data.

Disclaimer

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This publication shall not be for resale in whole or in part.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

About This Manual

This manual is intended for users of the specified APC equipment. It contains important safety warnings and instructions, gives an introduction to the display interface and provides detailed information for proper use of the equipment.

Related Documents

Download technical publications and other technical information or look for updates to your manual at our website at www.apc.com.

User Comments

Contact www.apc.com/support. We welcome your comments about this document.

Product Overview

Description

NetShelter CX enclosures are specialized enclosures with integrated cooling, noise dampening, and power distribution for server and network applications in office environments. The enclosures provide storage for industry-standard (EIA-310), 19-inch rack-mount hardware, which includes servers, voice, data, networking, internetworking, and APC power protection equipment.

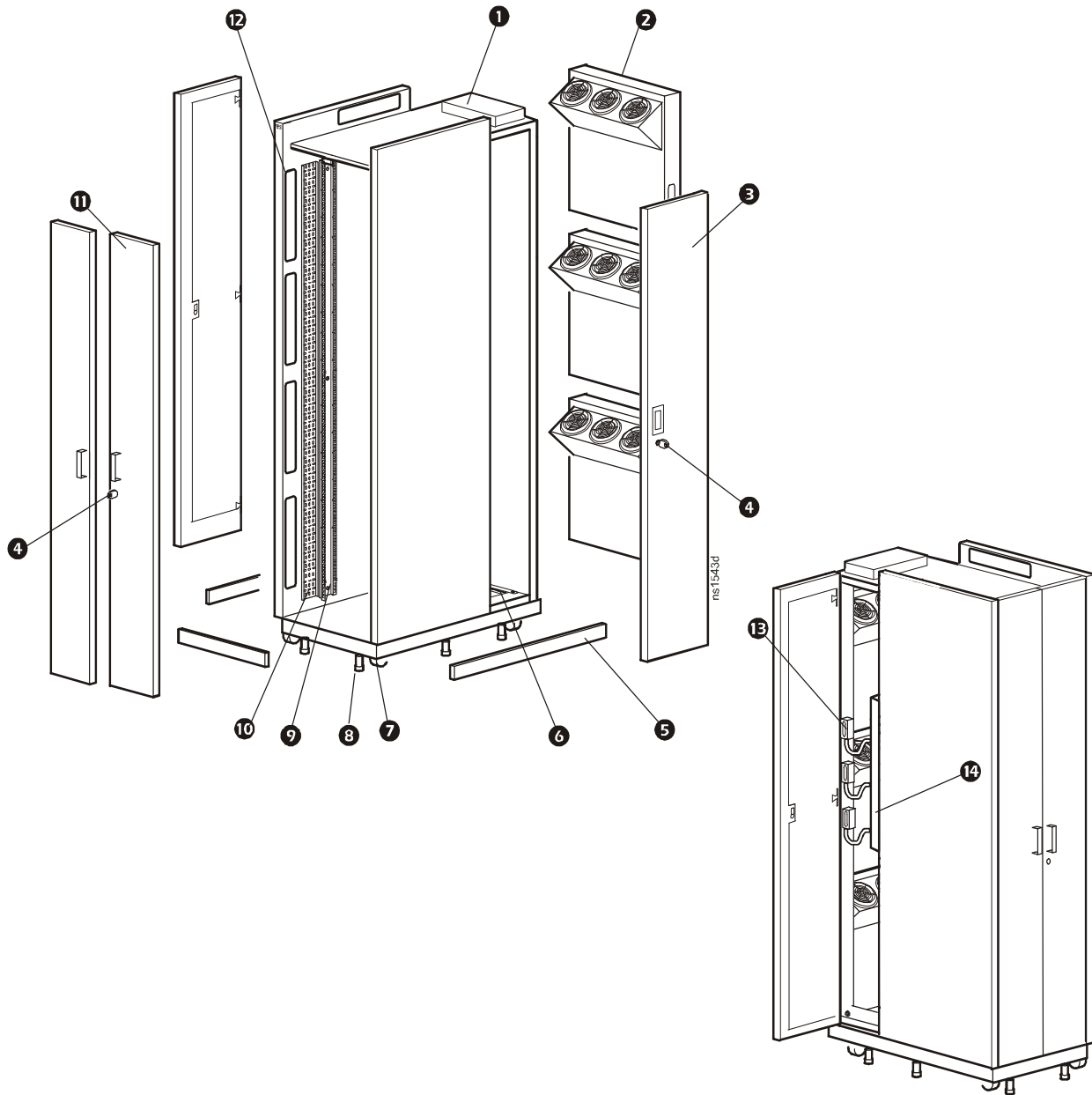
NetShelter CX Enclosures

Model	Availability	Rack Mounting Height	Rack Mounting Width	External Enclosure Width	Enclosure Depth
AR4018A	North America	18 U [†]	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4018IA	International	18 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4024A	North America	24 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4024IA	International	24 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4038A	North America	38 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)
AR4038IA	International	38 U	482 mm (19 in)	750 mm (29 in)	1130 mm (44.5 in)

[†]One U= 44.45 mm (1.75 in). See “Identifying one U-space on the vertical mounting flange” on page 12.

Product Inventory

Enclosure components



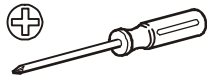
- | | |
|----------------------------|---------------------------------------|
| ❶ Top cable access port | ❸ Leveling foot [†] |
| ❷ Fan module | ❹ Vertical mounting flange |
| ❸ Side panel | ❺ Front vertical OU accessory channel |
| ❹ Key [†] | ❻ Front door |
| ❺ Bottom trim [†] | ❼ Airflow opening |
| ❻ Rear cable access port | ❽ Fan module power supply |
| ❼ Caster | ❾ Basic Rack PDU |

[†] The bottom trim, leveling feet, door keys, and rack PDU power cord (not shown) are not installed and can be found inside the enclosure.

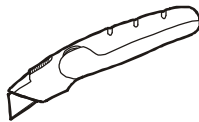
Important Information

Tools

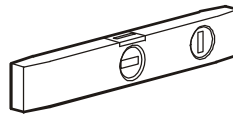
Other tools required (not provided)



Phillips screwdriver



Utility knife



Level



Cage nut tool

Safety

Important Safety Instructions

Save These Instructions This manual contains important instructions that must be followed during installation, operation, and maintenance of the equipment.

Use caution when moving an empty enclosure on its casters; the enclosure may be unstable when pushed or pulled from the side. Push the enclosure from the front or back when moving it on its casters. For extra stability, load 158 kg (350 lbs) of equipment into the bottom of the enclosure before moving it on its casters.

⚠ WARNING

TIPPING HAZARD

- Stabilize the enclosure before installing the components.
- Do not extend components on sliding rails out from the enclosure until you have installed three or more pieces of similar equipment, or the stabilizer plate or bolt-down brackets are installed.
- Do not extend more than one component from the enclosure at a time.
- Load the heaviest components first, and place them toward the bottom of the enclosure to prevent the enclosure from becoming top-heavy.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

To ensure adequate air movement, place the side of the enclosure no closer than six to eight inches to the wall.

Moving the enclosure

Castors. The total load on the casters may not exceed 450 kg (992 lbs). See the enclosure “Specifications” on page 20.

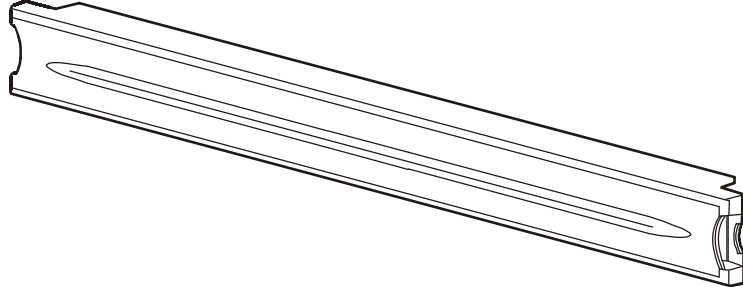
The front wheels have 360 degree rotation for maneuverability. Rear wheels have front-to-back motion for stability. Push the enclosure from the front or the back, not the sides; it may be unstable when pushed from the side. For greater stability, load 159 kg (350 lbs) or more of equipment into the enclosure before moving it on its casters.

Configuration

Before installing the enclosure, plan the location and space needed to install equipment, and plan the ergonomics of keyboards and video monitors. Improper airflow could damage installed components.

Blanking panels

Use blanking panels to close up large open spaces in the CX but not to completely seal the rack. The NetShelter CX works best when air can travel not just through the equipment vents, but also above and below any equipment that generates thermal energy.



APC offers modular, plastic Airflow Management Blanking Panels that snap into place without tools (AR8136BLK).

Front doors and Side Panels

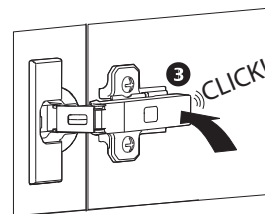
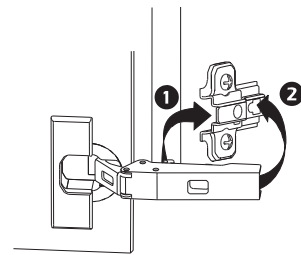
The front doors and side panels may be opened or removed to access the interior. Locking side panels offer additional security and assist with proper airflow within the enclosure. The locking side panel does not ship locked. To avoid personal injury or damage to the enclosure, one person should support the door or side panel while another person removes the door or side panel from its frame.

⚠ CAUTION
WEIGHT AND LEVERAGE HAZARD Doors and side panels are heavy. Removal or installation requires two people. Failure to follow these instructions can result in moderate personal injury.

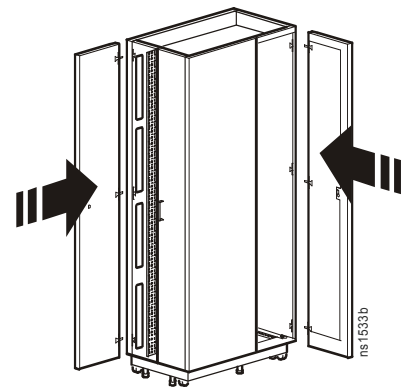
Hinge Operation

Installation . Slide the hinge on the door or side panel into the front of the mounting plate attached to the inside of the enclosure.

Using finger pressure, press the hinge onto the mounting plate. The latch will secure with an audible click.

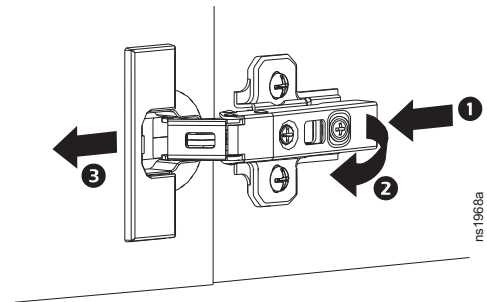


Three hinges are attached to their mountings in the enclosure to complete door installation. 38 and 24U racks have three hinges per door. The 18U racks have two hinges per door.

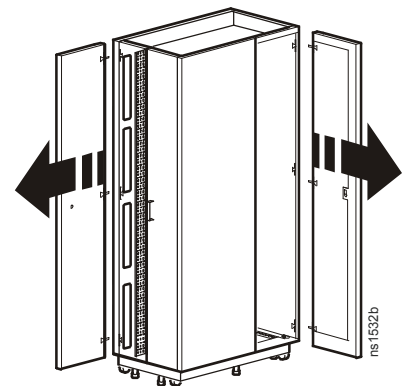


Removal.

- 1 Press on the hidden latch under the side arm.
- 2 Lift the hinge arm off the mounting plate
- 3 Slide the latch and door away from the mounting plate.



When all hinges are detached from their mountings, the door can be removed.



Installation

Installation and Setup

If equipment mounting rails are adjusted from their standard factory installed positions to a deeper position, such as in a networking application, the levelling feet must be used.

Note: The bottom trim and leveling feet are packaged separately and placed in the enclosure.

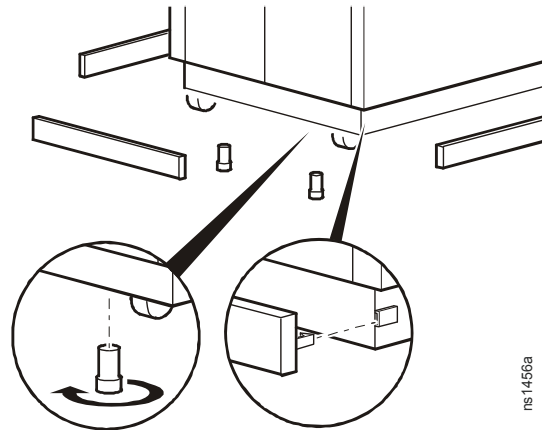
Leveling the enclosure and installing bottom trim

Level the enclosure before installing equipment.

The leveling feet at the corners provide a stable base if the floor is uneven, but they cannot compensate for a badly sloped surface.

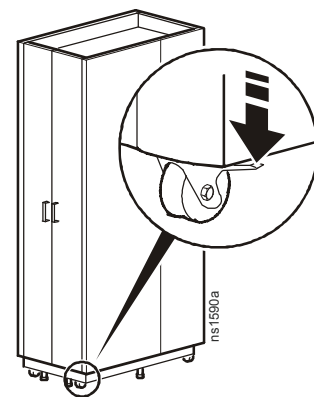
1. Move the enclosure to a level location.
2. For each leveling foot turn the leveling foot clockwise to extend the leveling foot until it makes firm contact with the floor.
3. Install the front and side bottom trim.

The enclosure can be leveled after equipment has been installed. Turn the leveling foot clockwise to extend the leveling foot until it makes firm contact with the floor.



Rack stabilization options

Lock the casters for additional stabilization.



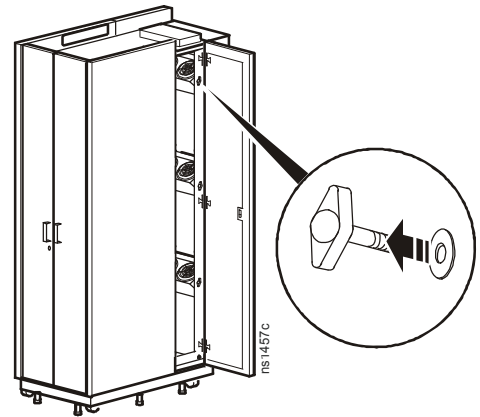
Removing and Installing Fan Modules

Unlock the fan module

Open the right hand side panel.
Unscrew the thumbscrew on the right side of the fan module to unlock the fan module so it can be opened.

Lock the fan module

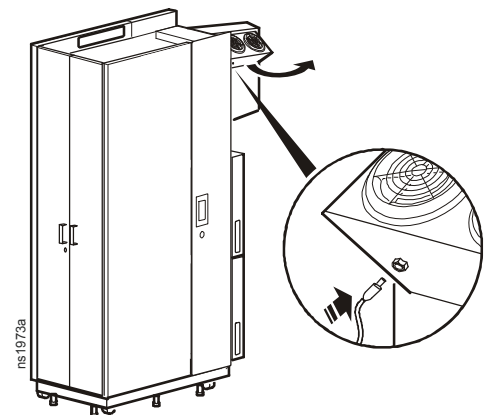
Open the right hand side panel.
Install the thumbscrew on the right side of the fan module to lock the fan module in place.



Removing the fan module

Start at the top when removing the fan modules.

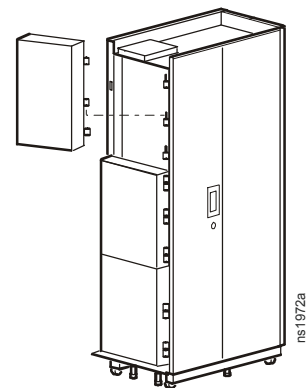
1. Detach the clip.
2. Swing the fan module out on its hinges.
3. Disconnect the fan module power supply plug from the fan module.



4. Lift the fan module from the hinges attached to the enclosure.

Installing the fan module

Reverse the procedure to install the fan module.



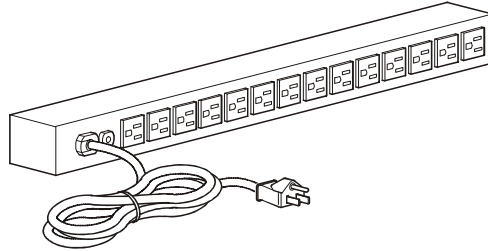
Rack PDU

The NetShelter CX Enclosure is provided with one Basic Rack PDU. The Rack PDU distributes power to devices in the enclosure.

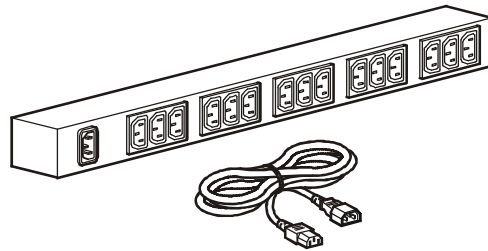
AP9567 - North American

Outlets. The Rack PDU has fourteen (14) NEMA 5015R outlets.

Power cord. The 12-foot (3.66-meter) power cord terminates with a NEMA 5-15P plug.



AP9568 - International



Outlets. The Rack PDU has fifteen (15) IEC-320-C13 outlets.

Power cord. The 6.5-foot (1.98-meter) power cord terminates with a IEC-320-C14 plug.

Specifications

Electrical	AP9567	AP9568
Input connector	NEMA 5-15P	IEC-320-C14 inlet
Output connectors	(14) NEMA 5-15R outlets	(15) IEC-320-C13 outlets
Nominal input voltage	100-120 VAC	120-240 VAC
Acceptable input voltage	± 10% of nominal voltage	
Input frequency	50/60 Hz	

Vertical Mounting Flanges

Vertical mounting flanges come factory-installed on the enclosure in the proper position for use with rack-mountable equipment having a depth of 800 mm (31.5 in). The front mounting flanges are adjustable towards the rear of the enclosure to accommodate different rails or equipment with other depths. The rear mounting flanges are adjustable towards the front. The flanges can be adjusted to be as close as 120 mm (4.7 in) or as far as 880 mm (34.6 in) apart in 40 mm (1.5 in) increments.

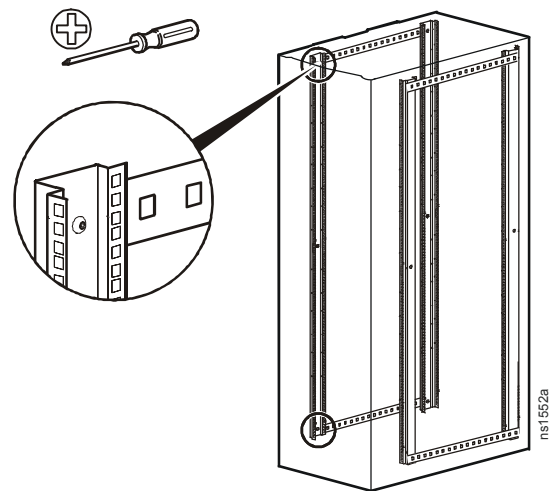
Note: If the front accessory channel is removed from the enclosure, the front rails can be adjusted forward 8 cm (3.14 in).

A common application for the enclosure is to move the flanges to a depth of 476 mm (18.75 in) to accommodate networking and telecommunications equipment.

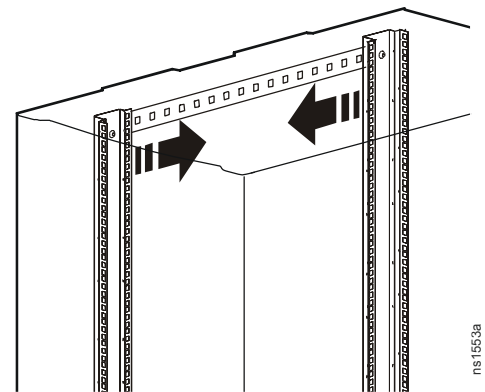
Adjusting the vertical mounting flanges on the side braces

Perform this procedure without any equipment installed on the mounting flanges.

1. Use a Phillips screwdriver (not provided) to remove the screws in the vertical mounting flange.



2. Move the pre-installed caged nut to the desired location, then reposition the vertical mounting flange to this position and install the screws.

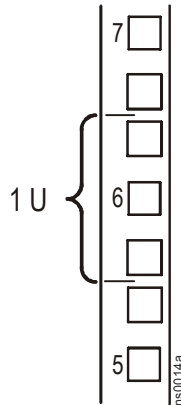


Installing Equipment

This section provides information on how to install rack-mount equipment in the enclosure. The instructions provided with the equipment provide more detailed information.

Identifying one U-space on the vertical mounting flange

When installing equipment, locate the top and bottom of a U-space on the mounting flanges. Every third hole on the mounting flanges of a NetShelter enclosure is numbered to indicate the middle of a U-space. A U-space consists of one of these numbered holes and one hole directly above and below it, as shown.



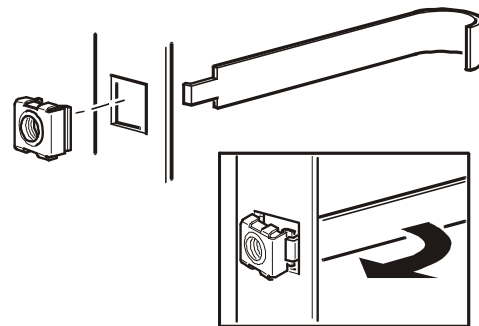
Installing cage nuts

APC offers a cage nut hardware kit (AR8100) for use with square holes. Install cage nuts horizontally, with the ears engaging the sides of the square hole. Do NOT install cage nuts vertically with the ears engaging the top and bottom of the square hole.

1. Insert the cage nut into the square hole by hooking one ear of the cage nut assembly through the far side of the hole.

Note: Install the cage nuts on the interior of the vertical mounting flange.

2. Place the cage nut tool (not provided) on the other side of the cage nut and pull to snap it into position.



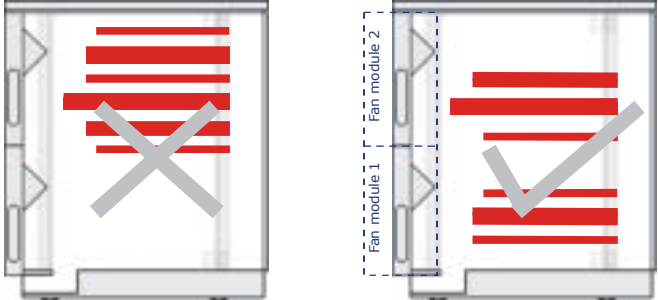
Removing cage nuts

1. Remove any attached screw.
2. Grasp the cage nut and squeeze the sides to release it from the square hole.

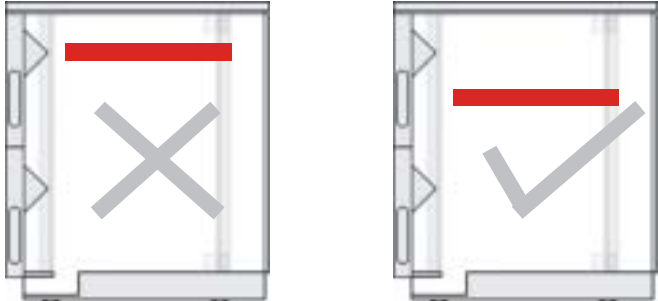
Equipment Planning Guidelines

Please note the following guidelines for proper installation and operation of hardware in a NetShelter CX Enclosure.

Avoid clustering hot-running equipment such as servers, dense redundant arrays of independent disks (RAID), and large voice-over-internet-protocol (VOIP) switches in one part of the enclosure. Distribute the thermal load evenly up and down the enclosure such that each fan module supports an equal amount of the thermal load.



Each fan module has a triangular metal section protruding slightly into the enclosure. This does not create an issue for installation of most equipment, but to allow for ample cabling space to the rear of the enclosure, deep servers should be installed in the enclosure space above and below these triangular metal protrusions.



Dimensions

Enclosure dimensions internal

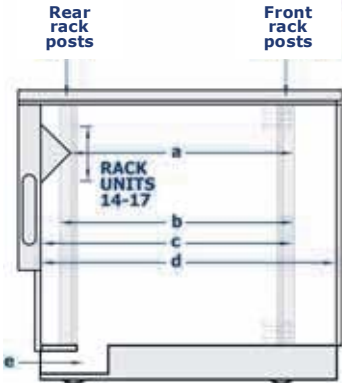
Reduction in internal cabinet depth in some rack units due to triangular protrusion of fan modules.

Dimension key.

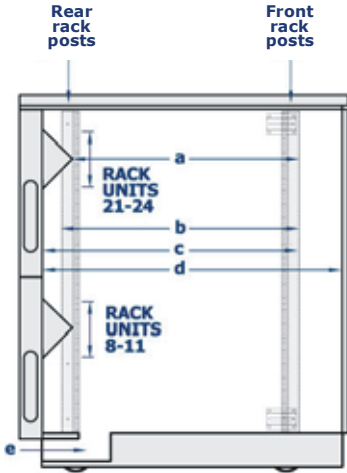
- a. 775 mm (30.5 in)
- b. 800 mm (31.5 in)
- c. 860 mm (33.5 in)
- d. 1010 mm (39.5 in)
- e. Indicates soundproofed cable entry/exit pathway.

Enclosure dimensions.

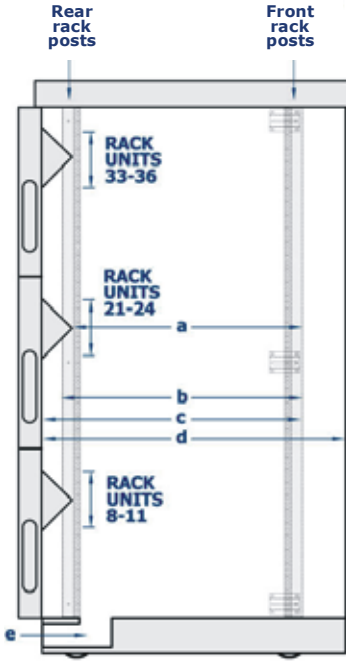
AR4018A
AR4018IA



AR4024A
AR4024IA



AR4038A
AR4038IA



Cable Management

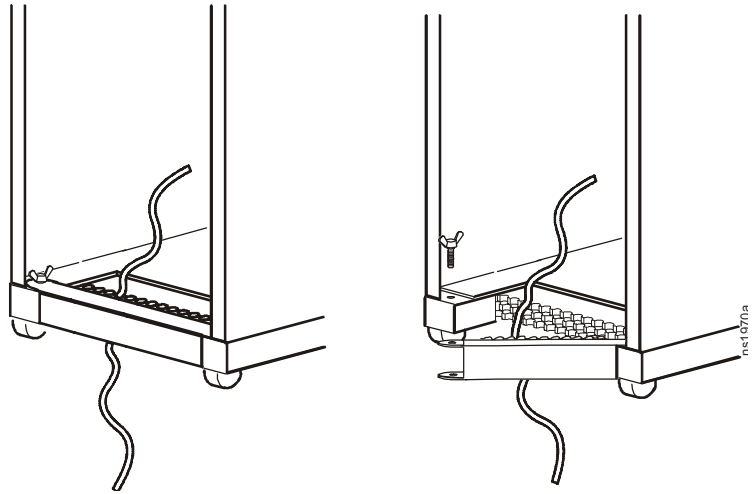
The NetShelter CX enclosure has a cable access opening (cable port) at the rear of the enclosure. The 38U enclosure has an additional cable port at the top for cabling from above. Four vertical 0U accessory channels are factory installed in the enclosures.

A variety of other cable management accessories are available. Visit the website at www.apc.com and go to the NetShelter CX product page for a full list of compatible cable management accessories.

Rear cable access port

The cable port is large enough to accommodate several hundred ethernet cables and has a removable top cover. The design is such that pre-terminated data distribution panels can be installed effortlessly, with no need for de-termination and re-termination.

Unscrew and remove one of the two thumbscrews to swing open the port door. Unscrew and remove the second thumbscrew to fully remove the cable port door.

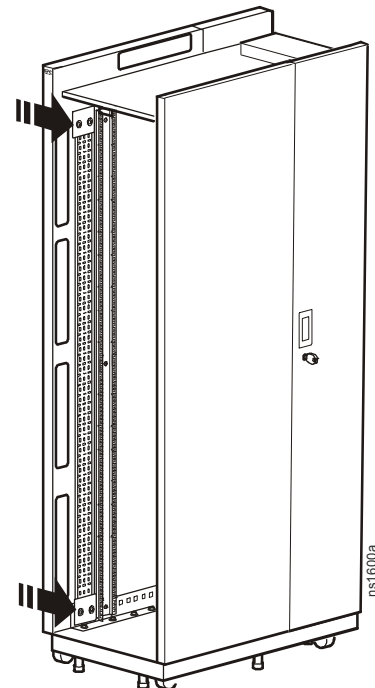


Vertical 0U accessory channels

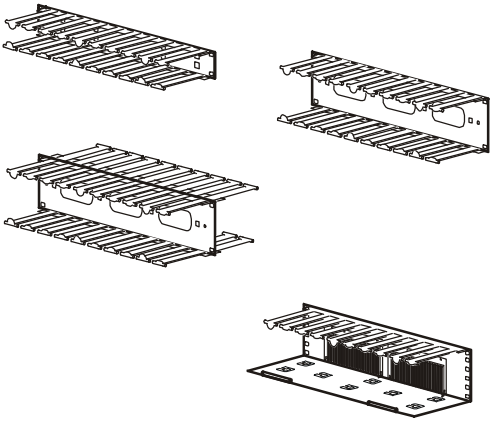

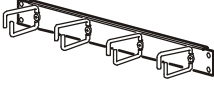
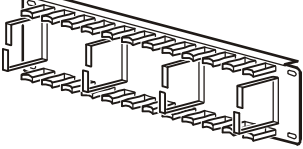
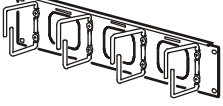
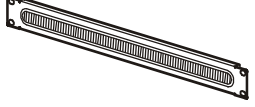
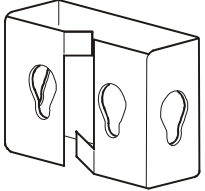
The vertical 0U accessory channels provide toolless mounting capabilities for APC Rack Power Distribution Units, APC cable containment brackets, and tie-off locations for cables. The standard position for the accessory channels is two located in the front of the enclosure and two in the rear of the enclosure.

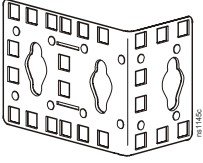

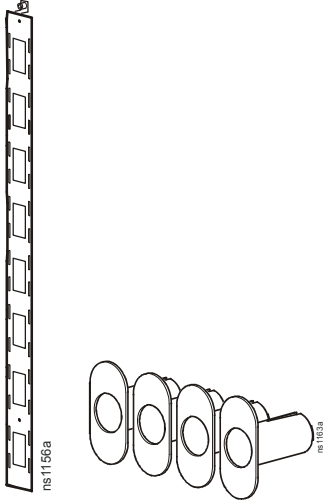
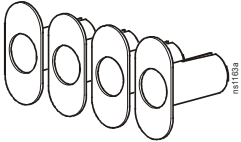
Removing vertical 0U accessory channels.

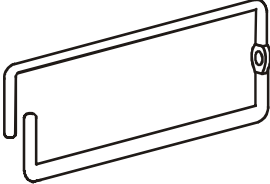

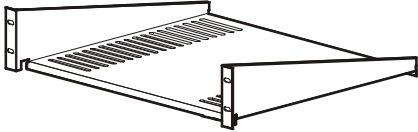
Vertical 0U accessory channels can be removed completely from the enclosure. Loosen the fasteners that attach the vertical 0U accessory to the enclosure.



Cable management options for 600-mm and 750-mm enclosures

Product	SKU	Description	Figure
19-inch horizontal cable organizers	AR8602 (1 U) AR8600 (2 U) AR8601 (2 U double sided) AR8603A (2 U high density)	Route patch cables horizontally at the front or rear of a 19-inch EIA enclosure.	
Cable management rings	AR8113A	Fastens cables to posts, mounting rails, or braces.	
19-inch horizontal cable organizer	AR8425A (1U) AR8426A (2U)	Routes cables horizontally on the front or back of the 19-inch EIA rack.	
19-inch 2-U patch cord organizer	AR8427A	Routes cables horizontally on the front or back of the 19-inch EIA rack.	
19-inch 2-U horizontal cable organizer pass-through	AR8428	Routes cables horizontally or front-to-rear.	
19-inch 1-U cable pass-through with brush strip	AR8429	Assists with containing air in the enclosure.	
Cable containment brackets	AR7710	Contains cables along the vertical 0U accessory channel and is installed without tools. Quantity of six.	

Product	SKU	Description	Figure
Zero-U accessory mounting bracket	AR7711	The bracket can be mounted in various locations throughout the enclosure for supporting small accessories and equipment.	
Vertical Cable Organizer for NetShelter 0-U Channel	AR8442	Eliminates cable stress by organizing cable layout within the rear channels of the enclosure. Takes up zero U of space within the enclosure. Consists of two pieces of equal size that, when connected, span the height of a 42-U enclosure. Can be used in any APC enclosure.	
Vertical fiber organizer and spools	AR8443A	The vertical fiber organizer and fiber organizer spools provide a method to manage fiber cabling within an enclosure and mount toollessly into the vertical 0U accessory channel of the enclosure. Quantity of two.	
Fiber organizer (spools only)	AR8444	Can be mounted toollessly to the vertical fiber organizer or attached with screws to the mounting rails of 750-mm wide enclosures.	

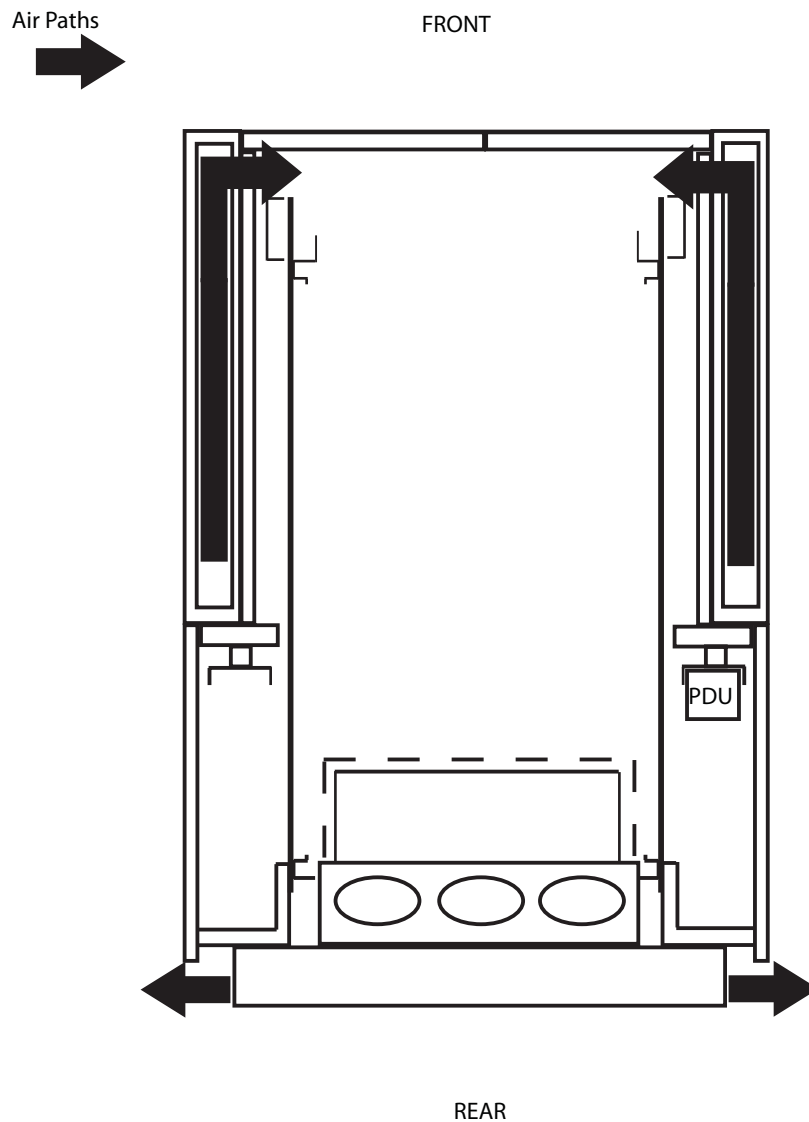
Product	SKU	Description	Figure
1-U cable ring	AR7707	Fastens cables to posts, for use with 750-mm enclosure networking applications.	
Toolless Hook-and-Loop Cable Managers	AR8621	A toolless mount hook-and-loop cable fastener for organizing data cable bundles. Various mounting positions are available on the back panel of a vertical cable organizer. Quantity of ten.	
Fixed-shelf 50-lb	AR8105BLK	Cantilever fixed shelf to enable the mounting of a monitor or other equipment into the rack environment or to allow cable pass-through from the front to rear of the enclosure.	

Cooling

Enclosure placement

When placing the NetShelter CX in an open office environment:

- The rear of the unit can be pushed fully against a wall. Six to eight inches of clearance should be left on either side of the unit.
- Do not place the enclosure unit in direct sunlight or in a small non-airconditioned space.
- Place the enclosure close to ventilation or cool air ingress points in the room.



Specifications

750-mm, 18, 24, 38-U Enclosures

Item	Measurements		
	AR4018A AR4018IA	AR4024A AR4024IA	AR4038A AR4038IA
Height	1050 mm (41 in)	1290 mm (51 in)	1950 mm (77 in)
Width	750 mm (30 in)	750 mm (30 in)	750 mm (30 in)
Depth	1130 mm (44.5 in)	1130 mm (44.5 in)	1130 mm (44.5 in)
Net weight cabinet	134.2 kg (295.2 lb)	163.4 kg (359.5 lb)	199.4 kg (438.7 lb)
Net weight packaged	163.72 kg (360.2 lb)	193.7 kg (426.1 lb)	232.24 kg (510.9 lb)
Clearance (for wiring between front door and vertical rail)	60.96 mm (2.40 in)	60.96 mm (2.40 in)	60.96 mm (2.40 in)
Maximum equipment Weight: static load	310 kg (680 lb)	280 kg (615 lb)	250 kg (550 lb)
Maximum recommended thermal load	1.2 kW (4,100 BTU/hr)	2.4 kW (8,200 BTU/hr)	3.6 kW (12,300 BTU/hr)
Power consumption	39 watts	68 watts	101 watts
Noise reduction †	Up to 18.5 dB	Up to 18.5 dB	Up to 18.5 dB

† 18.5 dB equates to perceived drop in noise of 98.5%. The NetShelter CX generates 48.5 dB of noise during normal operation. This is below standard office ambient noise levels of approximately 50 dB.

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